Abstract

Improved methods for purification, detection or characterization of molecules have been described in embodiments of the present invention. The improved methods rely on the ability to create a carrier reagent which is capable of (i) binding to a matrix either specifically or non-specifically; and (ii) forming a covalent linkage with any ligand having a nucleophilic group or a thioester as a result of a simple reaction which does not require a variety of chemical reagents or sophisticated chemistry. The covalent linkage between the carrier and the ligand relies on the chemical reaction between a thioester and a nucleophilic group. The carrier should either contain a reactive thioester which if it is a protein should be at the C-terminal end of the protein or a reactive nucleophilic group which if it is a protein should be at the N-terminal end and should preferably be a cysteine or selenocysteine. The ligand requires a reactive nucleophilic group to react with the thioester on the carrier or if the carrier has a reactive nucleophilic group, the ligand should have a reactive thioester.